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A Summary of Current Program 7/1/66  
and Preliminary Report of Progress  
for 7/1/65 to 6/30/66

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CONSUMER AND FOOD ECONOMICS  
RESEARCH DIVISION  
of the  
AGRICULTURAL RESEARCH SERVICE  
UNITED STATES DEPARTMENT OF AGRICULTURE  
and related work of the  
STATE AGRICULTURAL EXPERIMENT STATIONS

APR 17 1967

CURRENT SERIAL RECORDS

This progress report is primarily a tool for use of scientists and administrators in program coordination, development and evaluation; and for use of advisory committees in program review and development of recommendations for future research programs.

The summaries of progress on USDA and cooperative research include some tentative results that have not been tested sufficiently to justify general release. Such findings, when adequately confirmed, will be released promptly through established channels. Because of this, the report is not intended for publications and should not be referred to in literature citations. Copies are distributed only to members of Department staff, advisory committee members and others having a special interest in the development of public agricultural research programs.

This report also includes a list of publications reporting results of USDA and cooperative research issued between July 1, 1965, and June 30, 1966. Current agricultural research findings are also published in the monthly USDA publication, Agricultural Research. This progress report was compiled in the Consumer and Food Economics Research Division, Agricultural Research Service, U. S. Department of Agriculture, Washington, D. C.

UNITED STATES DEPARTMENT OF AGRICULTURE

Washington, D. C.

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## INTRODUCTION

Consumer and Food Economics Research is concerned with surveys of the kinds, amounts, and costs of food consumed by different population groups and the practices of families in the purchase and household use of various foods; the development of tables of the nutritive values of foods; nutritional appraisal of diets and food supplies; surveys of the kinds, amounts and costs of goods and services used for family living by rural households; studies of family practices in their management of financial and other resources; special economic studies of clothing and household textile use by families; and laboratory investigations 1/ basic to the development of recommendations for sizing of clothing, selection, use and care of clothing and household textiles, and the control of transmission of microorganisms by clothing and household textiles. To facilitate improvement of the dietary situation, levels of living and home management practices, guidance materials are prepared such as food budgets, dietary guides, and other aids to help families make the most advantageous use of their money and time resources.

Research findings are disseminated to the scientific public through technical publications; to teachers, extension workers, and other leaders concerned with helping families and consumers, through semitechnical reports; and to consumers themselves, through popular-type publications. Two periodicals issued regularly by the Division help to disseminate research findings or current information of concern to the groups reached - Nutrition Program News prepared for members of state nutrition committees and other workers in nutrition programs; and Family Economics Review, servicing extension agents, teachers, and other professional workers interested in family and food economics and home management.

Research results are interpreted for use in Rural Areas Development and other antipoverty programs by a senior staff member who is an active member of a wide variety of interagency, interdepartmental and professional groups which are concerned with problems of low-income families and their solution.

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1/ These investigations were carried out during the reporting period in the Clothing and Textiles Laboratory of the Clothing and Housing Research Division. They are reported here because of the plan to transfer this Laboratory to the Consumer and Food Economics Research Division.



The program of the Consumer and Food Economics Research Division is carried out at Hyattsville and Beltsville, Maryland, and under contract and cooperative agreements with State Experiment Stations, universities and private research organizations. The scientific effort devoted to this research in Fiscal Year 1965 totaled 28.0 scientific man-years at Hyattsville, 1.7 scientific man-years at Beltsville, and the equivalent of 9.9 scientific man-years in contract and cooperative agreements. The present report summarizes the current program of the Division and of the State Experiment Stations in the areas reported, and presents briefly the Division's progress toward the objectives of the Federal program during Fiscal Year 1966.

As a step toward implementation of the recommendations for a National Program of Research for Agriculture made jointly by the Association of State Universities and Land Grant Colleges and the USDA, a section has been added to each of the Areas in this report. It comprises a list of the related publications of the State Agricultural Experiment Stations in addition to those heretofore reported covering the results of USDA and cooperative research. In future years, it is anticipated that information will be available to permit reporting of achievements resulting from State research in a format comparable to the present reporting of the USDA and cooperative research.

Five examples of recent progress in the Division's research program follow:

Food spending reported by families in nationwide food consumption survey. Families surveyed in the spring of 1965 reported average expenditures of \$33 for one week's food. Of this total, \$27 was spent for food used at home and \$6 for food eaten away from home. Home-produced and other food for which no direct money outlay was made increased the total money value of food to \$35 per family. The average size of the families studied was 3.29; hence the total money value of food per person was \$10.65 a week. CFE food economists calculated that the money value of family food in spring 1965 was 17 percent greater than in spring 1955 when another nationwide food consumption survey was made. During this 10-year period the BLS index of retail food prices increased by 16 percent. Therefore, it can be assumed that most of the increase shown for survey households was due to higher food prices. An increase in spending for food eaten away from home by rural families was among other minor reasons for the increase. Urban families spent about the same proportion of their food money on food eaten away from home in 1965 as in 1955.

Meal patterns developed for expanded child feeding programs. In anticipation of the expansion of child feeding programs, CFE nutritionists have developed a meal pattern for breakfast and one for dinner, suitable for use as separate meals or in combinations with the current type A lunch.



The patterns are given in terms of combinations of foods from the four food groups of the Daily Food Guide, USDA Leaflet 424. Minimum amounts of food are specified for six age groups from 3 to 18 years. The patterns will serve as guidelines for planning menus to meet the needs of children for food energy and the major nutrients. The meal patterns are planned to give as wide a choice as possible among different foods while still assuring a balanced diet. The development of such patterns represents the combination of research findings on children's nutritional needs, on food composition, and on methods of food preparation with practical aspects of food service and menu acceptability.

Home production of food releases money for other uses and improves family diets. In a new approach to an assessment of the role of home-produced food, CFE family economists have calculated what proportion of the total money value of home-produced food can be counted as releasing money for uses other than food and what proportion adds to the money value of family diets. In the North Central and Southern regions, they found that a dollar's worth of food produced at home released 40 cents for uses other than food and gave the family 60 cents worth more food than nonproducing families had. These findings, which have important implications in home management counseling and which are basic to uses of consumption data in the construction of budgets for rural families, are based on data collected in the 1961 Survey of Consumer Expenditures.

Urban family spending for medical care higher than rural. Analysis of data from the nationwide survey of consumer expenditures has shown that spending by urban families for medical care averaged \$362 in 1961 compared with \$298 for rural nonfarm families and \$310 for farm families. Because urban families are smaller than rural families, differences in per capita expenditures for medical care were even more striking than differences in family averages. In the three population groups, approximately the same proportion of total spending for medical care was for prepaid care--about a fourth. The amounts, however, varied from \$94 for urban families to \$83 for rural families, both farm and rural nonfarm. A larger proportion of urban families than rural families probably also had some premiums paid by their employers. The greatest difference in spending between the groups was in direct payment for medical care other than hospitalized illness; urban families spent about \$50 more than rural families. One item that caused a major share of this difference was dental services for which urban families spent \$53, and rural families, both farm and rural nonfarm, about \$31.

Cotton and wool fabrics can disseminate viruses. ARS research has shown that selected viruses can survive long enough on cotton and wool fabrics

to be of epidemiological significance. The two viruses studied--vaccinia and poliomyelitis--persisted longer on wool fabrics than on cotton. Differences in survival of the viruses on both fibers were related to the method of contaminating the fabric, whether by household dust, by a spray, or by a solution. Persistence of the viruses was affected also by the relative humidity of the storage environment. This information on survival of viruses will help to develop methods for preventing or controlling their dissemination in home situations. The research was done under a USDA contract by Southern Research Institute.

Six examples of recent progress in research at the State Experiment Stations follow:

Iowa - Food consumption of older people. Iowa, a State where the percentage of people over-65 is the highest in the Nation (11.9% in 1960), has long been interested in food intake and the possible relationship of diet to the process of aging. One study of 1072 Iowa women gave a strong indication that as people grow older, they voluntarily restrict their diets, but do so without adequate precaution that they maintain a nutritional balance.

Another phase of the Iowa work focused on problems related to the gain in body weight often characteristic of aging. Energy expenditure and energy cost of normal activities of the subjects have been calculated. The investigators report that while cross-sectional studies have indicated that there is a gradual decrease in basal metabolism during aging, the longitudinal approach has suggested that the decrease is a function of aging occurring after 60 rather than throughout adulthood. The Iowa leaders suggest that longitudinal work is the natural approach for the study of the aging process, including its relationship to food patterns and physical well-being.

Kentucky, North Carolina, Tennessee, Virginia - Educational and vocational goals of rural youth and of their parents for them. Rural 9th and 10th grade youth were studied for indication of their educational attitudes and vocational preferences. Parents were also asked to respond regarding aspirations for their children. Similarities and differences in response were analyzed, and relationships between goals, level of living status, and membership in youth groups studied.

Report of the research indicates that there appears to be a "double standard" in educational aspirations of boys and girls, with girls holding more to the position of a belief in value of education for others - fathers, brothers, and future spouses. More frequent maternal than paternal

urging for both boys and girls to continue school was reported, and educational expectations increased with higher level of living background. While this latter finding was not unexpected, the magnitude was impressive. This may merely reflect a realistic appraisal of financial resources. It was further stated that there was only about 57 percent agreement between parents' and youths' expectations for further schooling, and the more pronounced disagreement was found at the higher income level. Size of family and youth group membership appeared to have no relationship to youths' plans and parents goals. The cooperating leaders concluded that the study gave support to the current concern for the economically deprived in that expectations were closely related to level of living status.

Texas - Food use and potential nutritional level. Between one-fifth and one-third of the income of most families goes for food. Food choices change, as do the dietary habits of individuals and families. In Texas, 1225 families were asked about their food purchases and information was analyzed to determine the potential nutritional level of the foods reported.

The dietaries of families in this study may be expected to be adequate in most nutrients, even when adjustments have been made for unexplained losses. Previous studies designed to determine nutritional adequacy of diets of different age groups have shown that many teenage children have poor food consumption habits. Taken as members of a family group, this tendency has been emphasized by this study. This is especially true for low income families but is also evident in families at higher income levels. Families with teenage children used less fruits and vegetables and fewer dairy products as well as smaller amounts of these products. Also, these families had a slightly smaller pound per person use of cereal products than families with elementary children. These are some of the factors which account for apparent food deficiencies observed for families with teenage children. In each case the deficiency was greater at the low income level.

Southern Regional Research - The relation of fiber properties to end-use performance. The participants have summarized the results of Phase I of this project in a 1965 bulletin "Performance of Sheets Made from Low and High Elongation Cottons." Muslin sheets made from fibers of known physical properties (including low and high elongation) were use-tested in womens' dormitories at four of the six Stations, and sampled after 5, 15, 30, 45, and 60 launderings. Determinations were made of such physical properties as dimensional change, breaking strength, elongation, toughness and tear, abrasion, and wrinkle resistance. At the beginning of wear there were differences in some physical properties between the fabrics made from high and low elongation fibers. However, in general, these differences decreased or disappeared with wear and laundering.



South Dakota - Blanket qualities. As one phase of the research on qualities of wool blankets, an evaluation was made of two commercially available blankets labelled "permanently bacteria resistant" and "permanent antiseptic treatment." This implies that the fabrics had been treated with sufficient amounts of a disinfectant to kill bacteria with which they came in contact. An untreated blanket was included as a control. Samples of all blankets were evaluated for antibacterial activity against Staphylococcus aureus using both qualitative and quantitative procedures of the American Assoc. of Textile Chemists and Colorists. No antibacterial activity was demonstrated in any of the blankets.

New York Cornell - Residual soil on laundered fabrics. A more complete knowledge of the nature of residual soil in fabrics is needed for development of improved procedures for its removal. Residual soil was studied in pillowcases laundered in home-type washing machines, using hard, softened, or soft water. Those originally washed in soft water lost the most oily soil. Spectrographic analysis was used to relate reflectance to the concentration of certain metals in the fabrics. Aluminum, indicating clay, was the most important in total reflectance. Iron was the most important in yellowness. Copper was also related to yellowness. When washed in hard water, the fabrics contained twice as much calcium as those washed in softened water. Nonmineral particulate soil was collected on glass fiber filters, stained, and examined microscopically.

California - Degradation and color changes of soiled cotton exposed to sunlight. Soiled and unsoiled cotton yarns were exposed to sunlight in a glass covered cabinet for four consecutive 3-month periods. The yarn was wound around a white cardboard holder so that the yarn on the back of the holder was shaded, thus making it possible to compare results under two conditions. The soil greatly accelerated the degradation of yarns exposed to direct sunlight. After 3 months the samples lost 40 percent in breaking strength, and after one year, 80 percent. The cellulose fluidity was 100-200 percent higher in the unshaded samples. The soiled samples were grayer and the reflectance values lower than the unsoiled ones. Apparently exposure to sunlight caused the soil to become tightly bound to the fibers.

## AREA NO. 1. FOOD CONSUMPTION AND DIET APPRAISAL

Problem. Information about food consumption and dietary levels is essential to effective consumer education in nutrition and food management, to market analyses, and to agricultural policy and program evaluations--both to provide the basis for such evaluations and to measure progress. Needed are periodic surveys of the kinds, amounts, and costs of food consumed by households and individuals in different population groups; surveys of practices of families in the purchase and use of specific foods; studies of factors affecting food choices; and nutritional appraisals of diets and food supplies. To facilitate improvement of the dietary situation, source materials such as food budgets and dietary guides based on advancing knowledge about food and nutrition should be developed for use in nutrition and consumer programs.

### USDA AND COOPERATIVE PROGRAM

The Department has a continuing, long-term program involving nutritionists, food economists, and statisticians engaged in applied research in food consumption and diet appraisal. The research is conducted at Hyattsville, Maryland, and under contract and cooperative agreement with State Experiment Stations, universities, and private research organizations. The Division's scientific effort devoted to research in this area in Fiscal Year 1966 totaled 14.2 scientific man-years at Hyattsville, and the equivalent of 9.1 scientific man-years in contract research and cooperative agreements. Of the total effort, 15.8 man-years were devoted to food consumption and dietary levels, 0.7 to food management practices, 1.5 to nutritive value of national food supply, 0.8 to food plans and food budgets, and 4.5 to support for food and nutrition programs.

### PROGRAM OF THE STATE EXPERIMENT STATIONS

The State program in this area totals 21.9 scientific man-years.

### PROGRESS--USDA AND COOPERATIVE PROGRAMS

#### A. Food consumption and dietary levels

1. 1965 nationwide survey. Collection of data from the more than 15,000 households and 13,000 individual family members cooperating in the nationwide

survey of food consumption in the United States is now complete. Tabulation of the household data and preparation of the data on individuals for tabulation are in progress.

Preliminary review of the household data showed that for families surveyed in the spring of 1965, the total money value of reported average expenditures for one week's food was \$35 per family. Twenty-seven dollars was spent for food used at home and \$6 for food eaten away from home. Federally donated food and food obtained through home production, as gifts, and as pay accounted for the remaining \$2. The average size of the families studied was 3.29; hence, the total money value of food per person per week was \$10.65. The total money value of food per family was 17 percent greater in the spring of 1965 than in the spring of 1955 when the most recent of the previous nationwide food consumption surveys was made. During this 10-year period the BLS index of retail food prices increased 16 percent. Therefore, it is assumed that most of the 17 percent increase in the money value of household food was due to higher prices. Among minor reasons for the increase was a substantial increase in spending by farm families for food bought and eaten away from home. Such food accounted for 11 percent of the money value of the food of farm families in 1965; ten years earlier, it accounted for only 7 percent. It accounted for approximately the same percentage of the money value of the food of nonfarm families in 1965 as in 1955. For urban families, this was 19 percent in 1965 and 18 percent in 1955; for rural nonfarm families, it was 14 percent in 1965 and 13 percent in 1955. A report of these preliminary findings on the money value of the food of households is being prepared.

2. Diets and nutriture of preschool children in low- and middle-income families, Honolulu. A study was initiated, under cooperative agreement with the University of Hawaii to determine the nutritional situation of about 125 2- and 3-year-old children in low-income families and about 125 children of the same ages in higher-income families having similar ethnic backgrounds. Determinations will be based on (1) food intake; (2) clinical findings; (3) blood and urine determinations; and (4) psychomotor development tests. Correlations will be sought with social and economic characteristics of the child's family, the mother's practices in feeding herself during the prenatal and nursing periods of the child's life, and the child's earlier diet and condition of health.

#### B. Food management practices

Household practices in homefreezer management. The data collected during July 1964-April 1965 from 240 urban and 242 farm families in and near Fort Wayne, Indiana were tabulated. Preliminary review of these data showed that



many homemakers had more than one reason for acquiring a homefreezer. Of the reasons given by urban families about 40 percent were related to convenience--e.g., to have food on hand and to save shopping time--and about 40 percent were related to economy--e.g., to buy meat by the side or quarter and to freeze local and home grown fruits and vegetables in season. The remaining 20 percent were miscellaneous reasons, a frequent one being to have more freezer space than that provided by the family's refrigerator. The reasons given by farm families were quite similar to those by urban families, about 35 percent relating to convenience, about 50 percent relating to economy, and about 15 percent being of a miscellaneous nature.

Fewer urban than rural households kept the temperature of the storage areas in their freezers at the recommended temperature of 0° F. or below, roughly 60 percent vs. 70 percent. Twenty-five percent of the freezers in urban households and about 35 percent of those in farm households were equipped with a thermometer.

Fifty-three percent of the urban households had upright freezers; 73 percent of the farm households had chest-type freezers. Only a very few had walk-in freezers. About 5 percent of the farm households in addition to owning homefreezers rented freezer locker space whereas the percentage of urban households adding this type of freezer space was negligible. Comparison of median figures for freezers in urban and farm homes indicated that freezers in urban homes were newer (6 vs. 8 years old), smaller (15 vs. 18 cubic feet), more often purchased "used" (22 vs. 13 percent of the freezers) and more often without such special features as alarms and quick-freezing sections. Urban and farm households paid the same median price for a new freezer (\$300) but urban households paid less for a used one (\$100 vs. \$120).

More freezers were placed in the basement of both urban and farm homes than elsewhere, 45 and 33 percent respectively. The next most important location were the garage, used in about 20 percent of the urban homes, and the utility or laundry room, used in about 20 percent of the farm homes. Freezers were also found fairly often in kitchens and on porches. Places used infrequently were the dining room, bedroom, breezeway, closet, shed, etc.

Reports of these and other findings from the study are now being prepared for publication in Family Economics Review. Preparation of a more comprehensive report will follow.

### C. Nutritive value of national food supply

Estimates of food energy (calories) and selected nutrients provided by the per capita food supply are calculated each year from data on apparent civilian consumption, retail basis, developed by the Economic Research



Service. The estimates indicate that for the past 10 years, the level of food energy has remained around 3,150 calories per capita per day--about 10 percent lower than in 1909-1913. This lower calorie level is the net result of about a 25 percent decrease in carbohydrate available for consumption, a 15 percent increase in available fat and a slight decrease in available protein, between 1909-1913 and 1965. This shift in the composition of the food supply caused the percentage of total calories furnished by carbohydrate to drop from 56 to 47 and the percentage of total calories furnished by fat to rise from 32 to 41. The percentage of total calories furnished by protein remained at about 12.

#### D. Food plans and food budgets

Estimates of the cost of food at home based on the USDA low-cost, moderate-cost, and liberal food plans were calculated quarterly, as usual, and published in Family Economics Review. Between March 1965 and March 1966, the cost for one week of the low-cost plan for a family of 2 adults and 2 school-aged children increased from \$24.60 to \$26.40; the moderate-cost plan increased from \$32.80 to \$35.40; and the liberal plan, from \$38.10 to \$41.20. An article entitled The Cost of USDA Food Plans and Family Grocery Bills was prepared and published in Family Economics Review to help families of different sizes and income levels determine which of the three food plans best fits their situation.

Work continued on a report that will supersede Agriculture Handbook No. 16, Planning Food for Institutions. As background for this work, data on quantities and nutritive value of food issues for over 40 schools and colleges were studied.

#### E. Nutritive content of school lunches

A nationwide study of the nutritive content of type A school lunches as served to sixth graders was initiated in cooperation with the School Lunch Division, Consumer and Marketing Service. Plans call for the collection and analysis of 20-lunch composites from 300 schools located in 19 states in five geographic regions. The objective is to provide data needed in evaluating the type A pattern. Because the pattern specifies the minimum amounts of foods required but does not specify maximum amounts that are allowed, the fat content of the lunches is of special concern.

#### F. Support for food and nutrition programs

Developments in nutrition research continue to be studied and interpreted for application to problems in food selection and food use. During the

reporting period, a breakfast pattern and a dinner pattern suitable for children of all ages were developed at the request of the School Lunch Division, Consumer and Marketing Service. These meal patterns will serve as guidelines for planning meals to meet the needs of children for food energy and the major nutrients. The patterns may be used independently or in conjunction with the type A lunch pattern.

To help promote better nutrition among low-income families a kit of materials showing how to use readily available foods was developed in cooperation with the Human Nutrition Research Division (ARS) and the School Lunch Division (C&MS). The kit, called "Food for Thrifty Families," consists of an adaptation of the "Daily Food Guide" accompanied by a series of 20 fliers that contain information on nutrition and simplified recipes using donated foods as well as foods relatively low in cost. The fliers will be available at local food distribution centers, food stamp issuance offices, and welfare offices. Another example of interagency cooperation in the development of publications was the review by CFE staff members of the series of five lessons on Food for Young Families prepared by the Federal Extension Service. A film strip to accompany these lessons was developed jointly by the Federal Extension Service and CFE.

Coordinating and strengthening of nutrition education programs were carried out through many channels. Twelve talks were given at the request of groups involved in community nutrition programs. Two radio tapes were made to promote basic concepts of nutrition in State and local programs. Consultant help and participation in conferences increased. The Division continued the bimonthly publication of Nutrition Program News, which reaches some 7,000 workers in nutrition and related fields, and participation in the Interagency Committee on Nutrition Education, for which CFE provides the secretariat.

Articles published in Nutrition Program News included: Nutrition Education for Special Programs - Diabetes and Arthritis; Food and Nutrition Services in Daytime Programs for Young Children; and Nutrition Training for Food Service Personnel. A special advisory group composed of representative users of the News met with the CFE staff to reexamine content and presentation and suggest topics of special interest for future issues of this publication.

Preliminary plans were made for the fifth National Nutrition Education Conference which will be held in February 1967. The conference is cosponsored by CFE and the Interagency Committee on Nutrition Education. The theme will be coordination and communication in nutrition programs.

PUBLICATIONS--USDA AND COOPERATIVE PROGRAMS

Food Consumption and Dietary Levels

Adelson, S. F. 1965. What's New in the 1965 Nationwide Food Consumption Survey. November. Processed, 7 pp. Paper presented at the 48th Annual Meeting of the American Dietetic Association.

Nutritive Value of National Food Supply

Friend, B. 1965. Nutritional Review. Natl. Food Sit. NFS-114. Outlook issue. November.

Friend, B. 1966. Nutritive Value of Food Available for Consumption, United States, 1909-64. ARS 62-14. January.

Food Plans and Food Budgets

Consumer and Food Economics Research Division. 1965. Cost of Food at Home. Family Economics Review. October, pp. 20-21; December, p. 28.

Consumer and Food Economics Research Division. 1966. Cost of Food at Home. Family Economics Review. March, pp. 20-22; June, p. 14.

Peterkin, B. 1965. When You Buy Food. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 416-419.

Peterkin, B. 1966. The Cost of USDA Food Plans and Family Grocery Bills. Family Economics Review. June, pp. 13-17.

Peterkin, B. and Clark, F. 1966. How Families Spend Their Food Dollars. Family Economics Review. March, pp. 3-6.

Support for Food and Nutrition Programs

Fowler, H. P. 1966. Nutrition Training of Food Service Personnel. Nutrition Program News. March-April. 4 pp.

Fowler, H. P. 1966. Puerto Rico Nutrition Committee Celebrates 25th Anniversary. Nutrition Program News. May-June. 4 pp.

Federal Extension Service and Agricultural Research Service. 1966. Script for filmstrip, Selecting and Buying Food for the Young Family. 8 pp.



- Hill, M. M. 1965. Nutrition Committees Members Meet with ICNE at Atlantic City. Nutrition Program News. July-August. 4 pp.
- Hill, M. M. 1965. Nutrition Education for Special Programs--Diabetes and Arthritis. Nutrition Program News. September-October. 4 pp.
- Hill, M. M. 1965. Food and Nutrition Services in Daytime Programs for Young Children. Nutrition Program News. November 1965-February 1966. 4 pp.
- Hill, M. M. 1965. Food to Satisfy. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 393-397.
- Page, L. 1965. Calories and Weight. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 398-402.
- Wolgamot, I. H. 1966. Helping Disadvantaged Families to Have Better Diets. April. Processed, 9 pp. Paper presented at the North Carolina Extension Foods and Nutrition Agents Training Conference, Greensboro, North Carolina.

PUBLICATIONS--STATE EXPERIMENT STATIONS 1/

- Barney, H. S., and Morse, R. L. D., 1965. Shopping of Low-Income Homemakers and Students Compared. Kansas. Dept. of Family Econ., Kansas State Univ., Manhattan.
- Bishop, C., Davis, B., and Harper, L. J., 1965. Factors Influencing Homemakers' Food-Buying Practices and Their Willingness to Try New Recipes. Virginia. Va. Agr. Exp. Sta. Bull. 565, 30 pp.
- Burk, M. C., 1965. Les Changements Qualitatifs Dans L'Alimentation et Leurs Répercussions Sur L'Agriculture: L'Expérience des Etats-Unis. Minnesota. Economie Rurale no 66, pp. 31-38.
- Dayton, M., and Hitchcock, M. J., 1965. A Study of Labor Time in a Centralized School Food Service Unit. Minnesota. J. Home Econ. 57(3), pp. 192-196.
- Dickins, D., 1965. Factors Related to Food Preferences. Mississippi. J. Home Econ. 57(6), pp. 427-430.
- Lamkin, G., Price, B. L., and Hielscher, M. L., 1965. Food Purchasing Practices of Married Students Living in University Housing. Illinois. Ill. Res. 7, No. 4.

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1/ This is a partial list for the calendar year 1965.

- Montgomery, M., 1965. The Psychology of Food Selection: Report of a Pilot Study. California (Berkeley). Calif. Agr. Exp. Sta. Report. Processed. 116 pp.
- Ostenso, G. L., Moy, W. A., and Donaldson, B., 1965. Developing a Generalized Cafeteria Simulator. Wisconsin. J. Am. Diet. Assn. 46, pp. 279-383.
- Stubbs, A. C., 1965. Food Use and Potential Nutritional Level of 1,225 Texas Families. Texas. Tex. Agr. Exp. Sta. B-1033, 38 pp.
- Stubbs, A. C., 1965. Homemakers' Orientation Related to Marketing. Texas. Tex. Agr. Exp. Sta. Bull. No. 1041, 12 pp.

## AREA NO. 2. TABLES OF FOOD COMPOSITION

Problem. Reliable values on the composition of foods are needed for appraisal of diets and food supplies, as background for many types of research in foods and nutrition, for developing materials to help in dietary planning and food selection, for use in production planning for this and other countries, for developing programs of food distribution, and as the basis for food and dietary standards in regulatory programs.

### USDA AND COOPERATIVE PROGRAM

Continuous review and evaluation is made of the world's scientific and technical literature on the composition of foods--over 100 journals in addition to numerous special reports being reviewed by the staff assigned to this program. For 75 years, tables of data for certain nutrients in foods have been published by the U. S. Department of Agriculture. Each new publication reflects advances both in food analyses and in knowledge of nutritional needs--nutrients being added to the tables as information on their presence in foods and on human requirements for them becomes available. Also reflected are advances in technology of preparing and marketing foods and in augmented facilities for fast transportation.

The Federal scientific effort devoted to work in this area conducted in Hyattsville in Fiscal Year 1966 totaled 7.7 scientific man-years.

### PROGRAM OF THE STATE EXPERIMENT STATIONS

The States report no research in this area.

### PROGRESS--USDA AND COOPERATIVE PROGRAMS

#### A. B-vitamins in foods

Summarization of data and derivation of representative values for a publication on the content of pantothenic acid, vitamin B<sub>6</sub> and vitamin B<sub>12</sub> in foods are nearing completion. The main part of this publication will be a table of values considered most appropriate for estimating pantothenic acid, vitamin B<sub>6</sub> and vitamin B<sub>12</sub> in the major foods. The data will be presented in terms of milligrams of the nutrient per 100 grams of edible portion and per 1 pound as purchased for each food item. The limited data available on the proportion of the three forms of vitamin B<sub>6</sub>, pyridoxine, pyridoxal, and pyridoxamine, in foods will be presented in a separate table.

#### B. Trace elements in foods

Data representing over 6,500 food samples analyzed for 1 to 22 trace elements have been reviewed, recorded on cards for punching and sorted by specific food. Included are some unpublished data obtained as a result of an intensive effort to locate sources for such data, particularly data obtained by atomic absorption. A preliminary table summarizing the data for 22 trace elements in foods arranged in 15 food groups is nearing completion. This table is particularly useful for indicating foods and food groups for which data are very limited or are conflicting. It also provides a convenient means of locating information needed in replying to the increasing number of requests for data on the trace element content of foods.

#### C. Nutritive value of retail and household units of food

Work has advanced on the preparation of a table of nutritive values in terms of common household and market units to be issued as a supplement to Agriculture Handbook No. 8 "Composition of Foods...raw, processed, prepared." Final values are now ready for more than 200 food items and are nearing completion for many others. For example, data needed in developing values for several of the larger groups of foods such as canned vegetables, fruits and fruit juices, and baked goods from commercial mixes are complete except for supplementary data which industry has promised to supply. For other foods, problems resulting from changes in size of market units or from physical changes in commercial products that affect the weight per unit volume have been resolved. Nutritive values in terms of common household and market units can now be calculated for these foods.

#### D. Special Services

Dissemination of information related to the composition of foods is an ongoing function of the staff and is accomplished through various special services. During the period covered by this report, information on the nutritive value of food was supplied for inclusion in textbooks on nutrition, diet therapy, and medicine, and several almanacs; also for use in investigations of misleading labeling of foods and false advertising claims; and, as background for developing research projects. For one such project, a table was supplied which provided phenylalanine values adapted from the literature and from Home Economics Research Report No. 4 "Amino Acid Content of Food," and general recommendations were given on methods for phenylalanine analysis and on foods to be analyzed. Information and technical assistance were also given to research teams conducting dietary surveys, to professional workers engaged in educational, welfare and health programs, and to representatives of the Food for Peace Program and the Food and Agriculture Organization of the United Nations.



A chapter containing information on recommended practices to observe in the home to protect quality and nutrients in food was prepared in cooperation with the Human Nutrition Research Division for the 1966 Yearbook of Agriculture. An extensive review chapter on the nutritive value of frozen foods is in preparation for the four-volume 4th edition of "The Freezing Preservation of Foods" by VanArsdel and Tressler.

#### PUBLICATIONS--USDA AND COOPERATIVE PROGRAMS

- Bluestone, B. and Vandersall, P. K. 1965. Saving Food Values. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 432-435.
- Pecot, R. K., Jaeger, C. M., and Watt, B. K. 1965. Proximate Composition of Beef from Carcass to Cooked Meat: Method of Derivation and Tables of Values. Home Economics Research Report No. 31. December.
- Soper, E. W. and Watt, B. K. 1965. Question, Please. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 407-416.
- Merrill, A. L., Adams, C. F., and Fincher, L. J. 1966. Procedures for Calculating Nutritive Values of Home-Prepared Foods: As Used in Agriculture Handbook No. 8, "Composition of Foods...raw, processed, prepared," revised 1963. ARS 62-13. March.
- Richardson, M. 1966. Twenty-five Years of Cereal Enrichment. Family Economics Review. June.

### AREA NO. 3. FAMILY ECONOMICS AND RURAL LIVING

Problem. Levels of living of rural families, often substantially lower than those of urban families, can be described in part by the quantities of goods and services families use for family living and the quality of housing they occupy. Periodic studies describing the situation and showing the adjustments families make to economic change in their use of money and other resources are needed to facilitate the development of programs to improve levels of living, especially in underdeveloped areas. Family living surveys and other types of family economic research provide background information for consumer education and family living outlook reports. Data on quantities of clothing and household textiles used and the frequency with which they are replaced are needed to develop budgets and to delineate those groups of items for which demand for agricultural fibers might be expanded.

#### USDA AND COOPERATIVE PROGRAM

The Department has a continuing long-term program involving family economists, home economists and statisticians who conduct basic studies of the expenditures of farm families for family living and of their home management practices. They also develop source materials for consumer education and information on the current family situation and outlook. Most of the research is carried out by Department staff at Hyattsville, Maryland. Small scale studies are usually conducted under cooperative arrangements or on contract. Other research is conducted cooperatively with other Federal agencies. For example, nationwide surveys of consumer expenditures are conducted cooperatively with the Bureau of Labor Statistics and, within the USDA, with the Statistical Reporting Service and Economic Research Service.

The Division's scientific effort devoted to research in this area in Fiscal Year 1966 totaled 6.0 scientific man-years at Hyattsville and the equivalent of 0.2 scientific man-year in research carried out under a cooperative agreement. Of this number 2.2 scientific man-years were devoted to rural family living studies; 0.7 to management of family resources; 1.2 to clothing economics; and 2.1 to Family Economics Review and outlook reports.

#### PROGRAM OF THE STATE EXPERIMENT STATIONS

A total of 62.9 scientific man-years was devoted to research in this area in Fiscal Year 1966.

PROGRESS--USDA AND COOPERATIVE PROGRAMS

A. Rural family living

Publication of the basic statistical reports from the 1960-61 Survey of Consumer Expenditures, a joint undertaking of the USDA and the Bureau of Labor Statistics, is virtually complete. The last 5 of the 45 publications bearing USDA numbers are now in press. During the reporting period, special attention was given to the preparation of descriptive analyses in the form of two papers at the 1965 Outlook Conference, three charts in the Handbook of Agricultural Charts 1965, and three articles in Family Economics Review. It was found that home-produced food made up a smaller proportion of the total value of food of families in 1961 than formerly, falling to 33 percent of the whole from 38 percent in 1955 and 57 percent in 1941. The decline in home production was accompanied by increased expenditures for food eaten at home and food eaten away from home. In constant dollars expenditures for food at home rose about 50 percent and for food away from home, about 200 percent between 1941 and 1961. In 1961, the value of home-produced food tended to be constant over the range of income and therefore home-produced food was of less importance to high-income families than to low-income families. It was also relatively constant over the range of family size except for single consumers who had less.

Attention was also given to finding the best method of using the data in constructing budgets and in determining the income needed by farm, rural nonfarm, and urban families to maintain equivalent levels of consumption. Food consumption has been widely used as an indicator of the level of well-being of groups of families. As a corollary of this, the adequacy of the total consumption of groups of families has been considered to be in the same relation as their food consumption. But food consumption can be an accurate indicator of total consumption only when families can use their resources interchangeably among the various categories of consumption. Home-produced food is a resource that does not meet this criterion and consequently families with home-produced food tend to eat better than they live in other respects. Analysis of the relation between the value of home-produced food and food expenditures of farm families in the North Central and Southern regions showed that each dollar's worth of food produced at home released 40 cents for uses other than the purchase of food and gave the family 60 cents worth more food than non-producing families had. Thus in these regions for each dollar's worth of food produced at home 60 cents should be subtracted from the value of food consumed before using this value as an indicator of total consumption.



## B. Management of family resources

A search for research-based information on management of time by homemakers was completed and a draft of an annotated bibliography prepared. Studies covering the amount of time spent in homemaking tasks, economy of household production versus purchase of commercially made goods and time saving through work simplification are reported. Little information was found on total time spent by homemakers in homemaking activities. Several of the most recent studies examined the influence of the wife's employment on the time spent on homemaking tasks--particularly food work which all studies have shown to be more time consuming than any other type of homemaking work. In three surveys conducted in the 1950's, it was reported that employed wives spent an average of about 20 hours a week on work connected with providing the family's meals whereas nonemployed wives spent from 25 to 35 hours per week.

## C. Clothing economics

A study of clothing acquisitions among low-income families in Des Moines, Iowa, has been developed in cooperation with the Iowa Agriculture and Home Economics Experiment Stations. The purpose is to test certain hypotheses concerning clothing consumption developed by the cooperator and to provide data needed in the Division's ongoing work on clothing budgets. A questionnaire was designed and pretested and the collection of data was virtually completed by June 30. Included are data on acquisition of clothing by all means and on the stocks of clothing held by families. By supplementing data on acquisitions of clothing by purchase, obtained in the 1960-61 Survey of Consumer Expenditures, the Iowa data will facilitate development of estimates of the relative wear-life of purchased clothing and clothing from other sources. These estimates, in turn, will make it possible to indicate in budgets the ratios at which new purchases and acquisitions from other sources may be interchanged. The new data will also permit the development of estimates of the clothing inventories the budgets will support.

## D. Family Economics Review and outlook reports

Quarterly publication of Family Economics Review is continuing. An evaluation of the scope and distribution of this publication was made through a panel of consultants representing five types of professional workers who use the publication and in conference with the ARS Information Division. In line with recommendations received, Family Economics Review will carry more articles on ARS research. Short summaries, in a form that can be used by county Extension home economists and high school teachers, will accompany the more technical and/or longer articles. The December issue will include more but shorter resumes of Outlook speeches and in addition some articles on other current information.

The Division was responsible for the planning of three sessions on family living at the 1965 Annual Outlook Conference and contributed a section to the paper, "The Agricultural Outlook for 1966," presented at a general session. Planning is underway for four sessions on family living at the 1966 conference.

## PUBLICATIONS--USDA AND COOPERATIVE PROGRAMS

### Rural Family Living Studies

#### Nationwide Studies

United States Department of Agriculture and Bureau of Labor Statistics.  
1965-1966.

Consumer Expenditures and Income, Summary Tabulations Classified by  
Pairs of Family Characteristics (tables 11-28).

Rural Farm Population, Northeastern Region, 1961. CES Report  
No. 16. 60 pp.  
Rural Farm Population, North Central Region, 1961. CES Report  
No. 17. 86 pp.  
Rural Farm Population, Southern Region, 1961. CES Report No. 18.  
92 pp.  
Rural Farm Population, Western Region, 1961. CES Report No. 19.  
58 pp.  
Rural Farm Population, United States, 1961. CES Report No. 20.  
93 pp.

Rural Nonfarm Areas in the Northeastern Region, 1961. CES Report  
No. 21. 94 pp.  
Rural Nonfarm Areas in the North Central Region, 1961. CES Report  
No. 22. 94 pp.  
Rural Nonfarm Areas in the Southern Region, 1961. CES Report  
No. 23. 94 pp.  
Rural Nonfarm Areas in the Western Region, 1961. CES Report  
No. 24. 94 pp.  
Rural Nonfarm Areas in the United States, 1961. CES Report  
No. 25. 94 pp.

Total Northeastern Region, Urban and Rural, 1960-61. CES  
Report No. 26. 94 pp.  
Total North Central Region, Urban and Rural, 1960-61. CES  
Report No. 27. 94 pp.

Total Southern Region, Urban and Rural, 1960-61. CES  
Report No. 28. 94 pp.  
Total Western Region, Urban and Rural, 1960-61. CES  
Report No. 29. 94 pp.  
Total United States, Urban and Rural, 1960-61. CES Report  
No. 30. 94 pp.

Detail of Expenditures and Income (tables 29 and 30).

Total Northeastern Region, Urban and Rural, 1960-61. CES  
Report No. 41. 165 pp.  
Total North Central Region, Urban and Rural, 1960-61. CES  
Report No. 42. 165 pp.  
Total Southern Region, Urban and Rural, 1960-61. CES Report  
No. 43. 165 pp.  
Total Western Region, Urban and Rural, 1960-61. CES Report  
No. 44. 165 pp.  
Total United States, Urban and Rural, 1960-61. CES Report  
No. 45. 165 pp.

Ellis, M. J. 1965. Home-produced Food of Farm Families. Family  
Economics Review, October, pp. 3-6.

Ellis, M. J. 1966. Farm Family Spending for Insurance, Gifts, and  
Contributions. Family Economics Review, June, pp. 3-10.

Holmes, E. G. 1965. Relation of Family Income and Expenditures to  
Number of Full-time Earners. Paper presented at 43rd Outlook Conference,  
processed, 11 pp.

Pennock, J. L. 1965. Family Expenditures for Medical Care. Paper  
presented at 43rd Outlook Conference, processed, 15 pp. Condensed in  
Family Economics Review, March, pp. 6-11 (1966).

Pennock, J. L. and Armstrong, H. 1966. Income and Consumption as  
Measures of Economic Status. Family Economics Review, June, pp. 3-5.

Area or Special-Purpose Studies

Curmutt, J. and Ferber, R. 1965. Financial Stock-Flow Relationships  
Among Central Illinois Farmers. Bureau of Economic and Business  
Research, University of Illinois, Urbana, 65 pp.

Ferber, R. 1966. The Reliability of Consumer Surveys of Financial  
Holdings: Demand Deposits. Jour. Amer. Stat. Assoc. 61(313): 91-103.

### Management of Family Resources

Consumer and Food Economics Research Division. A Guide to Budgeting for the Family. Home and Garden Bull. No. 108. 1965. 14 pp.

Holmes, E. G. 1965. The Employed Wife. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 175-178.

Holmes, E. G., and McIntosh, M. B. 1965. Installment Credit. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 157-161.

Mork, L. F. 1965. Savings on Cars. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 173-175.

Mork, L. F. and McIntosh, M. B. 1965. The Family Budget. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 162-164.

Pennock, J. L. 1965. Medical Bills. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 169-173.

### Family Economics Review and Outlook Reports

(Two papers for 43rd Outlook Conference, listed above.)

Britton, V. 1965. Clothing and Textiles: Supplies and Prices. Paper presented at the 43rd Outlook Conference, processed, 12 pp.; condensed in Family Economics Review, Dec., pp. 5-9 (1965).

Ellis, M. J. 1965. Housing: Supplies and Prices. Paper presented at the 43rd Outlook Conference, processed, 8 pp.; condensed in Family Economics Review, Dec., pp. 16-18 (1965).

Consumer and Food Economics Research Division. 1965-1966. Four issues of Family Economics Review, ARS 62-5. Oct. 1965, 20 pp.; Dec. 1965, 27 pp.; March 1966, 24 pp.; June 1966, 20 pp. Signed articles by staff of Family Economics Branch (omitting items listed above) were:

Holmes, E. G. 1965. U. S. Families--A Review of Recent Census Findings. Oct., pp. 6-11.

Holmes, E. G. 1965. Aid to Families with Dependent Children. Oct., pp. 14-15.



Rural Areas Development

Wolgamot, I. H. 1966. Home Economists Work with Low-Income Families. Paper presented at the South Carolina Home Economics Association Annual Meeting, Charleston, South Carolina. February. Processed, 10 pp.

Wolgamot, I. H. 1965. Work with Low-Income Families. Jour. Home Econ., December. pp. 782-783.

PUBLICATIONS--STATE EXPERIMENT STATIONS 1/

Abel, H., and Gingles, R. 1965. Identifying Problems of Adolescent Girls. Nebraska. J. of Educational Res. 58, pp. 389-392.

Abel, H., and Gingles, R. 1965. Life Goals of Parents for Children. Nebraska. J. Home Econ. 57(9), pp. 734-735.

Bishop, C., Davis, B., Harper, L. J., and Payne, V. C. 1965. Vocational and Educational Goals of Rural Youth in Virginia. Virginia. Va. Agr. Exp. Sta. Bull. 568, 52 pp.

Christopherson, V. A. 1965. Women in Modern Society. Arizona. J. Home Econ. 57(2), pp. 99-102.

Deacon, R. E., and Krofta, J. A. 1965. Economic Progress of Rural Nonfarm and Part-Time Farm Families. Ohio. Ohio Agr. Res. and Development Center, Res. Bull. 976, 30 pp.

Garner, K. B., and Sperry, I. V. 1965. Information and Services Obtained and Desired by Parents of Preschool Children. North Carolina. N. C. Agr. Exp. Sta., Tech. Bull. No. 167, 58 pp.

Gingles, R., and Voss, J. 1965. Teenage Marriages: Are They Successful? Nebraska. Nebr. Exp. Sta. Quarterly, pp. 14-16.

Gingles, R., and Voss, J. 1965. Young Couples Look at Teenage Marriage. Nebraska. Nebr. Exp. Sta. Quarterly, pp. 12-13.

Goetz, H. M., and Hotchkiss, A. S. 1965. Some Factors Influencing Purchase Decision-Making and Methods of Financing Selected Major Household Equipment by Arizona Families. Arizona. Ariz. Agr. Exp. Sta. Report No. 228, 27 pp.

Gover, D. A. 1965. A Study of Family Living Courses in South Carolina High Schools. South Carolina. S. C. Agr. Exp. Sta., Home Econ. Res. Series No. 4, 37 pp.

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1/ This is a partial list for the calendar year 1965.

- Herrmann, R. O. 1965. Causal Factors in Consumer Bankruptcy: A Case Study. California (Davis). Inst. of Govt. Affairs, Univ. of Calif., Davis, Occasional Paper Series No. 6, 41 pp.
- Herrmann, R.O. 1965. Economic Problems Confronting Teen-Age Newlyweds. California (Davis). J. Home Econ. 57(2), pp. 93-98.
- Johnston, A. F. 1965. Mississippi Rural Youth Aspire to College Education. Mississippi. Miss. Farm Res. 28(11), p. 4, p. 8.
- Langford, M. 1965. Personal Hygiene Attitudes and Practices in 1000 Middle-Class Households. New York (Cornell). Cornell Univ. Agr. Exp. Sta., Memoir 393, 130 pp.
- Lomberg, D. E., and Krofta, J. A. 1965. Farm Family Finances in the Middle Years. Wisconsin. J. Home Econ. 57(2), pp. 123-128.
- Magrabi, F. M., and Marshall, W. H. 1965. Family Developmental Tasks: A Research Model. Michigan. J. of Marriage and the Family, pp. 454-458.
- Magrabi, F. M. 1965. Models and Model Building. Michigan. J. Home Econ. 57(8), pp. 633-637.
- Magrabi, F. M., and King, M. P. 1965. Socioeconomic Situation of Selected Michigan State University Alumni after Six to Seven Years. Michigan. Quarterly Bull., Mich. State Univ. Agr. Exp. Sta., pp. 215-230.
- Moore, A., and Morse, R. L. D. 1965. Consumer Demand for a Homemaker Service. Kansas. Dept. of Family Econ., Kansas State Univ., Manhattan, 8 pp.
- Morse, R. L. D. 1965. Economic Status and Financial Security Provisions of Kansas Farm Operator Families. Kansas. Dept. of Family Econ., Kansas State Univ., Manhattan, 102 pp.
- Muse, M. 1965. Home for Old Age. Vermont. J. Home Econ. 57(3), pp. 183-187.
- North Carolina Agr. Exp. Sta. 1965. Educational and Vocational Goals of Rural Youth in the South. Southern Region. Southern Cooperative Series Bull. 107, 34 pp.
- Rosencranz, M. L. 1965. Social and Psychological Approaches to Clothing Research. Missouri. J. Home Econ. 57(1), pp. 26-29.
- Simmons, M. K., and Roehn, G. H. 1965. Needs and Concerns of Montana Home Economists in Consumer Economics. Montana. J. Home Econ. 57(1), pp. 30-32.

Tallman, I. 1965. Spousal Role Differentiation in Parents of Severely Retarded Children. Minnesota. Marriage and the Family, pp. 37-42.

Vener, A. M., and Weese, A. 1965. The Preschool Child's Perceptions of Adult Sex-Linked Cultural Objects. Michigan. J. Home Econ. 57(1), pp. 49-54.

Wauer, M. R. 1965. Consumers' and Home Economists' Fabric Descriptions. Iowa. J. Home Econ. 57(1), pp. 33-35.

#### AREA NO. 4. TEXTILES AND CLOTHING

Problem. Consumers need guidance on the selection, use, and care of household textiles and apparel to obtain maximum benefit from the everchanging variety of fibers, constructions, and finishes used in these items. Continuing research is needed to make such guidance possible. Needed are studies to determine the properties imparted to textiles by different fibers, fiber blends, fabric constructions, and finishes and to identify the properties textiles need for specific uses. To furnish guidance consumers want on the selection and use of appropriate laundry aids, more information needs to be obtained on the nature of soils, stains and contaminants and their removal from fabrics of different fiber contents and finishes. Also needed are further studies on environmental and other factors that accelerate undesirable changes in textiles and on means to prevent such changes. Because textiles are potential disseminators of pathogenic microorganisms, research is needed on factors influencing their survival on fabrics and on methods suitable for consumer use for controlling such transmission. Up-to-date information on body proportions is needed as a basis for sizing systems that will insure a continuing supply of well-fitting clothing. Designs for garment features are needed that will contribute to the comfort, safety, and efficiency for the wearer.

#### USDA AND COOPERATIVE PROGRAM

Investigations include studies of the relationship of in-use performance of fabrics of known fiber type, construction, and finish with laboratory determinations of such properties as elastic behavior, dimensional stability, and resistance to abrasion. Studies are conducted on the nature of soil and its removal from fabrics; the nature, causes, and prevention of undesirable changes in fabrics; and the role of fabrics in the dissemination of microorganisms and means of control. Principles of construction for use in making, repairing, or altering clothing and household textiles are developed. Anthropometric data are obtained as a basis for the sizing of apparel. The Division's scientific effort devoted to research in this area in Fiscal Year 1966 totaled 1.7 scientific man-years at Beltsville, Maryland, and the equivalent of 0.6 scientific man-year in contract research.

#### PROGRAM OF STATE EXPERIMENT STATIONS

The State program in this area totals 24.2 scientific man-years.



PROGRESS--USDA AND COOPERATIVE PROGRAMS

A. Performance of fabrics for clothing and household use

Five journal articles were published which report work completed during the previous reporting period. Initiation of further work is awaiting relocation of the Textiles and Clothing Laboratory.

B. Removal of soil and prevention of undesirable changes in textiles

Studies are continuing on interactions between sodium hypochlorite, substances present in oily soil and cotton fabric, as factors in the deterioration of the fabric. A paper was published reporting results obtained with saponifiable components of oily soil.

C. Dissemination of microorganisms by fabrics

Research was initiated under contract to obtain further quantitative data on the survival and retention of infectivity of bacteria and viruses on fabrics, following inoculation by direct contact, aerosol, and dust. Two papers were published on the survival of vaccinia virus and poliomyelitis virus on cotton and wool fabrics.

D. Anthropometric measurements basic to the sizing of clothing

Instrumentation was designed and procedures were developed for obtaining measurements essential to the development of improved sizing systems for children's footwear. A final report which includes working drawings and specifications for the instrumentation is being prepared by the University of Rochester, the contractor which conducted the work.

Plans were completed for a small-scale study, to be conducted under contract, to determine whether there have been significant changes in the body proportions of women since the comprehensive body measurement study carried out by USDA in 1939-1940.

PUBLICATIONS--USDA AND COOPERATIVE PROGRAMS

Performance of Fabrics for Clothing and Household Textiles

Dowlen, R. P. 1965. Durability of serge in trousers. Textile Res. Jour. 35(11): 1035-1041, illus.

- Dowlen, R. P. 1966. Performance characteristics of whipcord of wools versus blends of wools with viscose rayon or nylon. Textile Res. Jour. 36(1): 80-88, illus.
- Dowlen, R. P. 1966. The effect of yarn and cloth construction on properties of apparel fabrics of Deltapine 15 cotton. I. Laboratory evaluation of nine shirtings. Amer. Dyestuff Rptr. 55(8): 37-43, illus. Apr. 11; II. End-use performance. Amer. Dyestuff Rptr. 55(9): 29-36, illus. Apr. 25.
- Fletcher, H., and Roberts, S. H. 1965. Performance of knit fabrics...of Pima S-1, Peeler, and Karnak Cotton...of cotton-nylon blends. Knitting Indus. 85(4): 14-15ff, illus. July 12.
- Fletcher, H. M., and Roberts, S. H. 1965. Dimensional stability and elastic properties of plain knit wool fabrics with and without Wurlan finish. Textile Res. Jour. 35(11): 993-999, illus.

#### Removal of Soil and Prevention of Undesirable Changes in Textiles

- McLendon, V., and Richardson, F. 1965. Chemical changes produced by sodium hypochlorite in unsoiled and soiled cotton fabrics. Amer. Dyestuff Rptr. 54(24): 19-23, illus.

#### Dissemination of Microorganisms by Fabrics

- Anonymous. 1966. What about bacteria in cold-water laundering? Agr. Res. Mag. 14(7): 12-12, illus.
- Banville, R. R., and McNeil, E. 1966. Microbiology of drycleaning. Appl. Microbiol. 14(1): 1-7, illus.
- Dixon, G. J., Sidwell, R. W., and McNeil, E. 1966. Quantitative studies on fabrics as disseminators of viruses. I. Persistence of vaccinia virus on cotton and wool fabrics. Appl. Microbiol. 14(1): 55-59, illus. Jan.; II. Persistence of poliomyelitis virus on cotton and wool fabrics. Appl. Microbiol. 14(2): 183-188, illus. Mar. (Contract research with Southern Res. Inst.

#### Information for Consumer Guidance

- Anonymous. 1965. Clothing repairs. USDA Home and Garden Bul. 107, 30 pp., illus. October. (Supersedes FB-1925).
- \_\_\_\_\_. 1965. Pattern alteration: A guide for leaders in clothing programs. USDA Home Econ. Res. Rpt. 32, 38 pp., illus. November. (Supersedes FB-1968).

- Dowlen, R. P. 1965. Shoes. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 345-347.
- Fletcher, H. M. 1965. Knitted fabrics. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 349-352.
- Forziati, F. H. 1965. Clothes that fit. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 341-345.
- Hensley, M. L. 1965. Carpets and rugs. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 98-100.
- Hensley, M. L. 1965. Window curtains. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 101-102.
- McLendon, V. 1965. Hidden damages. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 376-378.
- McNeil, E. 1965. Laundry hygiene. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 371-373.
- Mott, S. J. 1965. Clothing the family. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 339-341.
- Richardson, F. M. 1965. Removing stains. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 373-376.
- Roberts, S. H. 1965. Stretch fabrics. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 352-355.
- Smith, M. 1965. Simplified clothing construction. USDA Home and Garden Bul. 59, 32 pp. (Sl. Rev.)
- Walsh, M. L. 1965. Soap and Syndets. Chapter in Consumers All, 1965 Yearbook of Agriculture. pp. 368-370.

#### General

- Batchelder, E. L. 1965. Clothing and textile research in the USDA from the consumer viewpoint. Indus. Quality Control 22(1): 5-8.



PUBLICATIONS--STATE EXPERIMENT STATIONS 1/

- Ainsworth, E. A., and Cusick, C. E. 1965. The Tetrapod Walker Carpet-Testing Machine. California. J. Text. Inst. 56, pp. 159-160.
- Finley, E. L. 1965. Influence of Cotton Fiber Elongation on Fabric Properties of Type 140 Cotton Sheeting. Louisiana. La. Agr. Exp. Sta. Bull. 61, 20 pp.
- Janeck, C. M., and Lund, L. O. 1965. Antibacterial Finishes on Wool Blankets. South Dakota. S. Dak. Farm and Home Res. 16, pp. 20-22.
- Keeney, P. 1965. Recent Developments in Research on Fibers and Textiles. North Central Region. J. Home Econ. 57(10), pp. 789-792.
- Lund, L. O., and Janeck, C. M. 1965. Double-Faced Fabrics. South Dakota. J. Home Econ. 57, pp. 362-364.
- Minnesota Agr. Exp. Sta. 1965. Adolescent Girls' Skirts. I. Mothers' and Daughters' Opinions of School Skirts. North Central Region. Sta. Bull. 478, NCR Res. Publ. 169, 32 pp.
- Minnesota Agr. Exp. Sta. 1965. Adolescent Girls' Skirts. II. Laboratory Evaluation of Skirt Fabrics. North Central Region. Sta. Bull. 478, NCR Res. Publ. 170, 32 pp.
- Morris, M. A., and Young, M. A. 1965. The Exposure of Soiled Cotton to Sunlight; Degradation and Color Changes. California. Text. Res. J. 35, pp. 178-180.
- Oklahoma Agr. Exp. Sta. 1965. Performance of Sheets Made from Low and High Elongation Cottons. Southern Region. Southern Cooperative Series Bull. 106, 30 pp.
- Starrett, E. 1965. Effect of Three Laundry Procedures on the Appearance and Performance Characteristics of Fine Spandex-Nylon Power Nets. Washington. J. Home Econ. 57, pp. 655-657.
- Young, M. A., and Morris, M. A. 1965. A Comparison of Two Chlorine Bleaches; Stain Removal and Degradation. California. J. Home Econ. 57, pp. 454-456.

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1/ This is a partial list for the calendar year 1965.

Line Project Check List -- Reporting Year July 1, 1965 to June 30, 1966

Work and Line Project Number	Work and Line Project Titles	Work Locations During Past Year	Line Project Incl. in	
			Summary of Progress (Yes-No)	Area and Subheading
CFE 1	Food consumption and dietary levels.			
CFE 1-6	Analysis and interpretation of data on household food consumption and dietary levels.	Hyattsville, Md.	No	--
CFE 1-7(CA)	Food consumption of individuals related to economic and social factors.	Hyattsville, Md.	No	--
CFE 1-8(C)	Household practices in homefreezer management.	Hyattsville, Md.		
CFE 1-9(C)	Use and discard of food in households.	Philadelphia, Pa.	Yes	1B
CFE 1-10	Effects of food distribution programs on diets of needy families.	Hyattsville, Md.	No	--
CFE 1-11(C)	Nationwide survey of household food consumption, 1965-66.	Hyattsville, Md.		
CFE 1-12(C)	Nationwide survey of food intake of individuals, spring 1965.	Philadelphia, Pa.	Yes	1A1
CFE 1-13(CA)	Diets and nutriture of preschool children in low- and middle-income families, Honolulu.	Hyattsville, Md.	Yes	1A1
PL-480	Food consumption in relation to family income in the rural population of Spain.	Honolulu, Hawaii	Yes	1A2
CFE 2	Appraisal of foods and diets for human nutrition.	Madrid and rural areas of Spain	No	--
CFE 2-5(Rev.)	Nutritive content of the U.S. per capita food supply, 1909 to present.			
CFE 2-6	Food budgets.	Hyattsville, Md.	Yes	1C
CFE 2-7	Interpretation of research for food and nutrition programs and policies.	Hyattsville, Md.	Yes	1D
CFE 2-8	Tables of trace elements and sulfur in foods.	Hyattsville, Md.	Yes	1F
CFE 2-9	Tables of selected B-vitamins in food-- folic acid, pantothenic acid, vitamins B-6 and B-12.	Hyattsville, Md.	Yes	2B
CFE 2-10	Compilation of data on the composition and nutritive value of foods.	Hyattsville, Md.	Yes	2A
CFE 2-11	Evaluation of publications for applied nutrition programs 1/.	Hyattsville, Md.	Yes	2C
CFE 2-12	Nutrition Programs Service.	Hyattsville, Md.	No	2D
CFE 2-13(C)	Attitudes and beliefs about food and health as factors influencing food choices 1/	Washington, D.C.	No	--
CFE 2-14	Nutritive content of Type A school lunches.	Hyattsville, Md.	Yes	1E

Continued

Line Project Check List -- Reporting Year July 1, 1965 to June 30, 1966

Work and Line Project Number	Work and Line Project Titles	Work Locations During Past Year	Line Project Incl. in	
			Summary of Progress (Yes-No)	Area and Subheading
CFE 3	Rural family expenditures and household management.			
CFE 3-1(Rev.)	Development of Family Economics Review and Outlook reports.	Hyattsville, Md.	Yes	3D
CFE 3-5(Rev.)	Rural family living in selected areas in Texas.	Hyattsville, Md.	No	--
CFE 3-7	Rural family spending patterns in 1961.	Hyattsville, Md.	Yes	3A
CFE 3-9	Development of clothing budgets.	Hyattsville, Md.	No	--
CFE 3-10	Use of time by homemakers.	Hyattsville, Md.	Yes	3B
CFE 3-11(CA)	Clothing acquisitions as a basis for the development of standards for clothing budgets for low-income families.	Hyattsville, Md. Ames, Iowa	Yes	3C
CFE 4	Fabric quality, construction, and care of clothing and household textile articles.			
CFE 4-2(C)	Quantitative studies on fabrics as disseminators of microorganisms.	Birmingham, Ala.	Yes	4C
CFE 4-3(C)	Development of instrumentation and procedures for anthropometric measurements essential for the improvement of sizing systems for children's footwear.	Rochester, N.Y.	Yes	4D
CFE 4-4	Use of hypochlorite bleach on soiled cotton fabrics as a factor in deterioration of cotton fabrics. Part II.	Beltsville, Md.	Yes	4B

1/ Initiated late in F.Y. 1966







